

Notice of Allowability

Application No.

09/181,809

Examiner

Kim-Kwok CHU

Applicant(s)

ISHII ET AL.

Art Unit

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed on July 12, 2004.
2. ☒ The allowed claim(s) is/are 1-10, 57, 11-20, 22-36, 59, 37, 38, 60 and 40-56 which are renumbered as 1-57 respectively.
3. ☒ The drawings filed on 06 February 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 7/30/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Allowable Subject Matter

1. Claims 1-20, 22-29, 35-38, 40-57, 59 and 60 are allowable over prior art.

2. The following is an Examiner's statement of reasons for the indication of allowable subject matter based on Applicant's Amendment filed on July 12, 2004.

As in claims 1 and 35, the prior art fail to teach or fairly suggest that an optical recording medium having the following features:

(a) an optical recording material that changes a state of photo-induced birefringence in response to a recording light that is externally controlled from the optical recording medium to rotate a polarization angle of the recording light;

(b) a portion of the recording layer that changes a state of photo-induced birefringence substantially acting optically as a half-wave plate; and

(c) an azimuth of the half-wave plate within the optical recording medium is multilevel-modulated so that information is recorded on the optical recording medium by the recording light.

As in claims 11 and 37, the prior art fail to teach or fairly suggest that an optical recording medium having the following features:

(a) an optical recording material that changes a state of photo-induced birefringence in response to a recording light that is externally controlled from the optical recording medium to rotate a polarization angle of the recording light;

(b) a portion of the recording layer that changes a state of photo-induced birefringence substantially acting optically as a quarter-wave plate; and

(c) an azimuth of the quarter-wave plate within the optical recording medium is multilevel-modulated so that information is recorded on the optical recording medium by the recording light.

As in claims 22 and 40, the prior art fail to teach or fairly suggest that an optical recording method having the following steps:

(a) the recording light externally controlled from an optical recording medium to rotate the polarization angle of the recording light;

(b) forming an optical element on the optical recording medium by the illumination, that acts substantially as a half-wave plate, having an azimuth corresponding to a polarization angle on the optical recording medium;

(c) the azimuth corresponding to a polarization angle on the optical recording medium is multilevel-modulated so that information is recorded on the optical recording medium by the recording light.

As in claims 26 and 43, the prior art fail to teach or fairly suggest that an optical recording method having the following steps:

(a) the recording light externally controlled from an optical recording medium to rotate the polarization angle of the recording light;

(b) forming an optical element on the optical recording medium by the illumination, that acts substantially as a quarter-wave plate, having an azimuth corresponding to a polarization angle on the optical recording medium; and

(c) the azimuth corresponding to a polarization angle on the optical recording medium is multilevel-modulated so that information is recorded on the optical recording medium by the recording light.

As in claim 30, the prior art fail to teach or fairly suggest that an optical recording apparatus having the following features:

(a) a spatial optical modulator that controllably rotates a polarization angle of a recording light; and

(b) a focusing optical system that performs multilevel modulation of an azimuth of a half-wave plate or a quarter-wave plate within an optical recording layer of an optical recording medium by directing the recording light obtained through the spatial optical modulator to the optical recording medium.

As in claim 46, the prior art fail to teach or fairly suggest that an optical recording apparatus having the following features:

(a) a reproducing light optical system for transmitting reproducing light to an optical recording medium in which an azimuth of an optical element that acts substantially as a half-wave plate is multilevel recorded in response to a polarization angle of a recording light that is externally controlled from the optical recording medium to rotate the polarization angle of the recording light; and

(b) the reproducing light is directed on the optical recording medium in which an azimuth of the half-wave plate within the optical recording medium has been multilevel-modulated so that recorded information can be reproduced.

As in claim 49, the prior art fail to teach or fairly suggest that an optical recording apparatus having the following features:

(a) a reproducing light optical system for transmitting reproducing light to an optical recording medium in which an azimuth of an optical element that acts substantially as a quarter-wave plate is multilevel recorded in response to a polarization angle of a recording light that is externally controlled from the optical recording medium to rotate the polarization angle of the recording light; and

(b) the reproducing light is directed on the optical recording medium in which an azimuth of the quarter-wave plate within the optical recording medium has been multilevel-modulated so that recorded information can be reproduced.

As in claims 52, 53 and 54, the prior art fail to teach or fairly suggest that an optical recording apparatus/method having the following features:

(a) a polarization rotary device that rotates a polarization angle of a recording light; and

(b) a reproducing light is directed onto the optical recording medium after an azimuth of a half-wave plate or a quarter-wave plate within the optical recording medium has been multilevel-modulated so that recorded information can be reproduced.

As in claim 55, the prior art fail to teach or fairly suggest that an optical recording medium having the following features:

(a) an optical recording layer in which an optical element is formed by a recording light that is externally controlled from the optical recording medium to rotate a polarization angle of the recording light;

(b) the optical element having an azimuth of birefringence and acting on reproducing light to adjust a polarization angle of the reproducing light by an amount greater than a difference

between a polarization angle of the recording light used to form the optical element and a polarization angle of the reproducing light before the reproducing light is acted on by the optical element; and

(c) the reproducing light is directed onto the optical recording medium after the azimuth of birefringence of the optical element has been multilevel-modulated so that recorded information can be reproduced.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over the prior art of record.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C.
20231 Or faxed to:

(703) 872-9306 (for formal communications intended for
entry. Or:

(703) 746-6909, (for informal or draft communications,
please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park
II, 2021 Crystal Drive, Arlington. VA., Sixth Floor
(Receptionist).

Any inquiry of a general nature or relating to the status of
this application should be directed to the Group receptionist
whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Kim CHU
whose telephone number is (703) 305-3032 between 9:30 am to 6:00
pm, Monday to Friday.


TAN DINH
PRIMARY EXAMINER

16 11/12/04
Kim-Kwok CHU
Examiner AU2653
November 12, 2004

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